

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>MI22-2736</b>	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, Item 5 below.	
International application No. <b>PCT/US2004/040252</b>	International filing date (day/month/year) <b>01/12/2004</b>	(Earliest) Priority Date (day/month/year) <b>10/12/2003</b>
Applicant <b>MICRON TECHNOLOGY, INC.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box II).

3. ☐ Unity of invention is lacking (see Box III).

**4. With regard to the title,**

the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

**CONTAINER CAPACITORS AND METHOD OF FORMING**

**5. With regard to the abstract,**

the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. With regard to the drawings,**

- a. the figure of the drawings to be published with the abstract is Figure No. 17



as suggested by the applicant.



as selected by this Authority, because the applicant failed to suggest a figure.



as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (January 2004)

## INTERNATIONAL - SEARCH REPORT

International application No.

PCT/US2004/040252

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

The invention includes semiconductor constructions, and also includes methods of forming pluralities of capacitor devices. An exemplary method of the invention includes forming conductive storage node material (60) within openings in an insulative material (25) to form conductive containers. A retaining structure lattice (30) is formed in physical contact with at least some of the containers, and subsequently the insulative material (28) is removed to expose outer surfaces of the containers. The retaining structure (30) can alleviate toppling or other loss of structural integrity of the container structures. The electrically conductive containers correspond to first capacitor electrodes. After the outer sidewalls of the containers are exposed, dielectric material (100) is formed within the containers and along the exposed outer sidewalls. Subsequently, a second capacitor electrode (103) is formed over the dielectric material. The first and second capacitor electrodes, together with the dielectric material, form a plurality of capacitor devices.

Form PCT/ISA/210 (continuation of first sheet (3)), January 2004

## INTERNATIONAL SEARCH REPORT

International Application No

CT/US2004/040252

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L21/02 H01L21/8242

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	US 2001/012223 A1 (KOHYAMA YUSUKE) 9 August 2001 (2001-08-09)  paragraphs '0065! - '0087!; figures 2,3	36-41, 44, 45, 48-51, 54-60, 63-67
Y	US 2002/030221 A1 (SANDHU GURTEJ SINGH ET AL) 14 March 2002 (2002-03-14) paragraphs '0027! - '0047!; figures 1-14	1, 2, 11, 12
Y	US 2002/098654 A1 (DURCAN D. MARK ET AL) 25 July 2002 (2002-07-25) paragraphs '0016! - '0038!; figures 1-15  -/--	1, 2, 11, 12

☒ Further documents are listed in the continuation of box C☒ Patent family members are listed in annex

## \* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*Z\* document member of the same patent family

Date of the actual completion of the international search

13 May 2005

Date of mailing of the international search report

25/05/2005

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## INTERNATIONAL SEARCH REPORT

International Application No

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	US 2002/153614 A1 (EMA TAIJI ET AL) 24 October 2002 (2002-10-24) paragraphs '0161! - '0189!, '0464! - '0479!; figures 1-4, 44-47 -----	45-51, 54-67
X	US 2003/178684 A1 (NAKAMURA SHUNJI) 25 September 2003 (2003-09-25)  paragraphs '0114! - '0154!, '0184! - '0191!, '0232! - '0256!, '0404! - '0428!; figures 1-6, 10, 15-18, 43-50 -----	45-51, 54-60, 63-67
A	US 2002/086479 A1 (REINBERG ALAN R) 4 July 2002 (2002-07-04) paragraphs '0002! - '0033!; figures 1-11 -----	1, 2, 11, 12
A	US 2002/163026 A1 (PARK HONG-BAE) 7 November 2002 (2002-11-07) paragraphs '0002! - '0022!, '0046! - '0075!; figures 3, 4 -----	1, 2, 11, 12

Form PCT/ISA/210 (continuation of second sheet) January 2004

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

CT/US2004/040252

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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Form: PCT/ISA-21C (patent family annex) (January 2004)